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STORAGE-TYPE DATA RECEIVER

VERIFICATION

Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:

I, Shiro OGASAWARA, declare and say:

that I am thoroughly conversant in both the Japanese and English languages; and

that I am presently engaged as a translator in these languages;

that the attached document represents a true English translation of the Japanese Priority Application No. 10-244864 filed on August 31, 1998.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed this 3rd day of September, 2003.

TRANSLATOR

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[Title of the Invention] DATA RECEPTION SYSTEM, DATA RECEPTION METHOD, AND RECORDING MEDIUM ON WHICH DATA RECEPTION PROCESSING PROGRAM IS RECORDED

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[List of Attached Documents]

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[Document Name] SPECIFICATION

[Title of the Invention] DATA RECEPTION SYSTEM, DATA RECEPTION METHOD, AND RECORDING MEDIUM ON WHICH DATA RECEPTION PROCESSING PROGRAM IS RECORDED

[Scope of Claim for Patent]

[Claim 1] A data reception system, comprising:

reception means for receiving data;

storage means for storing the data received by said reception means;

information extraction means for extracting, from the data received by said reception means, next-update information indicating when the data is to be next updated;

record means for recording the next-update information extracted by said information extraction means;

comparison means for comparing the next-update information recorded in said record means and current time/date; and

writing control means for writing the data received by said reception means into said storage means based on the comparison made by said comparison means.

[Claim 2] A data reception system as claimed in claim 1, wherein said writing control means writes the data received by said reception means into said storage means when the next-update information recorded in said record means coincides with the current time/date.

[Claim 3] The data reception system as claimed in claim

1 or 2, wherein said reception means further comprises

a tuner for selecting a signal of channel among plural signals of channels;

data extraction means for extracting data from the signal selected by said tuner; and

tuner control means for controlling channel selection by said tuner based on the comparison made by said comparison means.

[Claim 4] The data reception means as claimed in claim 3, wherein said tuner control means controls said tuner means in such a manner as to tune itself with an applicable channel when the next-update information recorded in said record means coincides with the current time/date.

[Clam 5] The data reception system as claimed in any one of claims 1 to 4, further comprising power supply control means for controlling power supply to said reception means based on the comparison made by said comparison means.

[Claim 6] The data reception system as claimed in claim 5, wherein said power supply control means supplies the power to said reception means when the next-update information recorded in said record means coincides with the current time/date.

[Claim 7] A data reception method comprising:

a step of receiving data by reception means;

a step of extracting, from said received data, next-update information indicating when the data is to be next updated;

a step of recording said extracted next-update information;

a step of comparing said recorded next-update information with current time/date; and

a step of writing the data received based on the comparison made in said step of comparing to storage means.

[Claim 8] The data reception system as claim 7, wherein said step of receiving data further comprises:

a step of selecting a signal of channel among plural signals of channels;

a step of extracting data from said selected signal; and

a step of controlling channel selection based on the comparison made in said step of comparing.

[Claim 9] The data reception system as claimed in claim 7 or 8, further comprising a step of controlling power supply to said reception means based on the comparison made in said step of comparing.

[Claim 10] A computer-readable recording medium on which a data reception processing program is recorded for making a computer to carry out data reception processing, wherein said data reception processing program makes the computer to carry out:

processing of extracting next-update information from received data when the data is to be next updated;

processing of recording said extracted next-update information;

processing of comparing said recorded next-updated information with a current time/date; and

processing of writing the received data into storage means based on the comparison made by said processing of comparing.

[Claim 11] A recording medium on which the data reception processing program as claimed in claim 10 is recorded, wherein said data reception processing program further makes the computer to carry out processing of controlling channel selection of reception means for receiving data based on the comparison made by said processing of comparing.

[Claim 12] A recording medium on which the data reception processing program as claimed in claim 10 or 11 is recorded, wherein said data reception processing program further makes the computer to carry out processing of controlling power supply to reception means for receiving data based on the comparison made by said processing of comparing.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention]

The present invention relates to a data reception system a data reception method for broadcast-type data distribution service such as text broadcasting or data broadcasting, and communication-type data distribution service such as the Internet, and a recording medium on which a data reception processing program is recorded.

[0002]

[Prior Art]

Recently, broadcast-type data distribution service such as text broadcasting or data broadcasting for distributing data has started. Communication-type data distribution service for distributing data through a network such as the Internet has been also introduced. Accordingly, a variety of data reception systems have appeared on the market, which are of a type receiving data distributed through such broadcast-type data distribution service and communication-type data distribution service.

[0003]

In the broadcast-type data distribution service, for example, program information including program title, broadcast time, broadcasting station, and the cast is inserted into between television broadcast waves of terrestrial waves (VBI: Vertical Blanking Interval) or into satellite broadcast waves in digital.

[0004]

FIG. 10 is a block diagram showing the structure of a conventional broadcast-type data reception system.

The data reception system in FIG. 8 includes a tuner 51, a data extraction part 52, a data decoding part 53, a data storage part 54, and a data presenting part 55.

[0005]

The tuner 51 selects a broadcast signal in a channel set among broadcast signals received by an antenna, and outputs a video signal included in the broadcast signal to the data extraction part 52. The data extraction part 52 extracts data

from the video signal outputted from the tuner 51. The data decoding part 53 decodes (interprets) the data extracted by the data extraction part 52. The data presenting part 55 is structured by a display device such as display, and presents the details of the data decoded by the data decoding part 53.

[0006]

[Problems to be Solved by the Invention]

In such conventional data reception system, however, it is uncertain when distribution data is updated. Therefore, whenever data comes, the data has to be written to the data storage part 53. To be specific, even if the newly-provided data is identical to the one already in the data storage part 54, the data already in the data storage part 54 is overwritten with the data which is newly-provided but identical thereto.

[0007]

When the data storage part 54 is structured by a device being susceptible to deterioration from frequency of data writing thereto such as hard disk or nonvolatile memory, the life cycle of the data storage part 54 gets shorter.

[0008]

In addition, as it is uncertain when the data is updated, the tuner 51 has to be left on an applicable channel.

[0009]

Further, to keep desired data up-to-date, power has to always be supplied to all of the tuner 51, the data extraction

part 52, the data decoding part 53, the data storage part 54, and the data presenting part 55.

[0010]

An object of the present invention is to provide a data reception system and a data reception method capable of cutting down, to a minimum, the frequency of data writing necessary to keep the storage data the latest, and a recording medium on which a data reception processing program is recorded.

[0011]

Another object of the present invention is to provide a data reception system and a data reception method capable of keeping data in storage the latest while cutting down, to a minimum, the frequency of data writing without constantly setting the tuner to an applicable channel, and a recording medium on which a storage-type data reception processing program is recorded.

[0012]

Still another object of the present invention is to provide a data reception system and a data reception method capable of keeping data in storage the latest while cutting down, to a minimum, the frequency of data writing without constantly supplying power to constituents necessary to receive data, and a recording medium on which a storage-type data reception processing program is recorded.

[0013]

[Solution to the Problems]

(1) First Invention

A data reception system according to a first invention comprises: reception means for receiving data; storage means for storing the data received by the reception means; information extraction means for extracting, from the data received by the reception means, next-update information indicating when the data is to be next updated; record means for recording the next-update information extracted by the information extraction means; comparison means for comparing the next-update information recorded in the record means and current time/date; and writing control means for writing the data received by the reception means into the storage means based on the comparison made by the comparison means.

[0014]

In the data reception system according to the present invention, the received data is stored in the storage means. Further, the next-update information indicating when the received data is to be next updated is extracted, and the extracted next-update information is recorded in the record means. Then, the next-update information recorded in the record means is compared with the current time/date, and the received data is written into the storage means based on the comparison.

[0015]

As such, the data is written into the storage means based on the comparison made between the next-update information and

the current time/date. In this manner, the frequency of data writing to the storage means can be cut down to a minimum. Therefore, it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0016]

(2) Second Invention

According to a data reception system according to the second invention, in the structure of the data reception system according to the first invention, the writing control means writes the data received by the reception means to the storage means when the next-update information recorded in the record means coincides with the current time/date.

[0017]

In this manner, the data is written into the storage means when the next-update information coincides with the current time/date. Therefore, the data is written into the storage means only when the data is to be updated.

[0018]

(3) Third Invention

According to a data reception system according to the third invention, in the structure of the data reception system according to the first or the second invention, the reception means further comprises a tuner for selecting a signal of channel among plural signals of channels; data extraction means for extracting data from the signal selected by the tuner; and tuner control means

for controlling channel selection by the tuner based on the comparison made by the comparison means.

[0019]

In this manner, a signal in a channel set among plural signals of channels is first selected, and then data is extracted from the selected signal. Then, the channel selection in the tuner is controlled based on the comparison made between the next-update information recorded in the record means and the current time/date. Therefore, there is no more need to constantly set the tuner to an applicable channel, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0020]

(4) Fourth Invention

According to a data reception system according to the fourth invention, in the structure of the data reception system according to the third invention, the tuner control means controls the tuner means in such a manner as to tune itself with an applicable channel when the next-update information recorded in the record means coincides with the current time/date.

[0021]

In this manner, the tuner is set to an applicable channel only when the next-update information coincides with the current time/date. Therefore, the tuner can be used for another purpose when not used to update data.

[0022]

(5) Firth Invention

A data reception system according to the fifth invention, in the structure of the data reception system according to any one of the first to the fourth inventions, further comprises power supply control means for controlling power supply to the reception means based on the comparison made by the comparison means.

[0023]

In this manner, the reception means is controlled with power supply based on the comparison made between the next-update information recorded in the record means and the current time/date. Therefore, there is no more need to constantly supply power to the reception means, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0024]

(6) Sixth Invention

According to a data reception system according to the sixth invention, in the structure of the data reception system according to the fifth invention, the power supply control means supplies power to the reception means when the next-update information recorded in the record means coincides with the current time/date.

[0025]

In this manner, the reception means receives power only when the next-update information coincides with the current time/date.

Therefore, consumption power can be reduced.

[0026]

(7) Seventh Invention

A data reception method comprises: a step of receiving data be reception means; a step of extracting, from the received data, next-update information indicating when the data is to be next updated; a step of recording the extracted next-update information; a step of comparing the recorded next-update information with current time/date; and a step of writing the data received based on the comparison made in the step of comparing to storage means.

[0027]

In this manner, in the data reception system according to the present invention, the next-update information indicating when the data is to be next updated is extracted from the received data, and then the extracted next-update information is recorded. Thereafter, the recorded next-update information is compared with the current time/date, and the data received based on the comparison is written into the storage means.

[0028]

In this manner, the data is written into the storage means based on the comparison made between the recorded next-update information and the current time/date. Therefore, the frequency of writing data to the storage means can be suppressed to a minimum, and thus it becomes possible to keep data up-to-date while

preventing the storage means from being deteriorated.

[0029]

(8) Eighth Invention

According to a data reception method according to the eighth invention, in the data reception method according to the seventh invention, the step of receiving data further comprises: a step of selecting a signal of channel among plural signals of channels; a step of extracting data from the selected signal; and a step of controlling channel selection based on the comparison made in the step of comparing.

[0030]

In this manner, a signal in a channel set among plural signals of channels is first selected, and then data is extracted from the selected signal. Then, the channel selection in the tuner is controlled based on the comparison made between the recorded next-update information and the current time/date. Therefore, there is no more need to constantly set the tuner to an applicable channel, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0031]

(9) Ninth Invention

A data reception method according to the ninth invention, in the data reception method according to the seventh or the eighth invention, further comprises a step of controlling power supply

to the reception means based on the comparison made in the step of comparing.

[0032]

In this manner, the reception means is controlled with power supply based on the comparison made between the recorded next-update information and the current time/date. Therefore, there is no more need to constantly supply power to the reception means, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0033]

(10) Tenth Invention

A computer-readable recording medium on which a data reception processing program is recorded for making a computer to carry out data reception processing, wherein the data reception processing program makes the computer to carry out: processing of extracting next-update information from received data when the data is to be next updated; processing of recording the extracted next-update information; processing of comparing the recorded next-updated information with a current time/date; and processing of writing the received data to storage means based on the comparison made by the processing of comparing.

[0034]

According to the recording medium on which the data reception processing program of the present invention is recorded, the next-update information indicating when the data is to be next

updated is extracted from the received data, and then the extracted next-update information is recorded. The recorded next-update information is then compared with the current time/date so that the received data is written into the storage means based on the comparison.

[0035]

As such, the data is written into the storage means based on the comparison made between the next-update information and the current time/date. Therefore, the frequency of writing data to the storage means can be suppressed to a minimum, and thus it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0036]

(11) Eleventh Invention

According to the recording medium on which the data reception processing program of the eleventh invention is recorded, in the recording medium on which the data reception processing program of the tenth invention is recorded, the data reception processing program further makes the computer to carry out processing of controlling channel selection of reception means for receiving data based on the comparison made by the processing of comparing.

[0037]

In this manner, the channel selection in the reception means is controlled based on the comparison made between the recorded

next-update information and the current time/date. Therefore, there is no more need to constantly set the reception means to an applicable channel, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0038]

(12) Twelve Invention

According to the recording medium on which the data reception processing program of the twelfth invention is recorded, in the recording medium on which the data reception processing program of the tenth or the eleventh invention is recorded, the data reception processing program further makes the computer to carry out processing of controlling power supply to reception means for receiving data based on the comparison made by the processing of comparing.

[0039]

In this manner, the reception means is controlled with power supply based on the comparison made between the recorded next-update information and the current time/date. Therefore, there is no more need to constantly supply power to the reception means, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0040]

[Embodiments of the Invention]

FIG. 1 is a block diagram showing the structure of a data

reception system according to a first embodiment of the present invention. The data reception system of this embodiment is a data reception system such as a television receiver for receiving the broadcast-type service.

[0041]

In FIG. 1, a tuner 1 selects a broadcast signal in a channel set among broadcast signals received by an antenna, and outputs a video signal included in the broadcast signal. A data extraction part 2 extracts data from the video signal outputted from the tuner 1. The data decoding part 3 decodes (interprets) the data extracted by the data extraction part 2. The data presenting part 10 is structured by a display device such as display or a printing device such as printer, and presents the details of the data decoded by the data decoding part 3.

[0042]

A next-update information extraction means 4 extracts, from the data extracted by the data extraction part 2, next-update information indicating when the data is to be next updated. A next-update information recording means 5 records the next-update information extracted by the next-update information extraction means 4. A clock part 8 outputs current time/date information indicating the current time/date.

[0043]

Comparison means 6 compares the current time/date information outputted from the clock part 8 and the next-update

information recorded in the next-update information record means 5. A data storage part 9 is structured by a recording medium such as hard disk or nonvolatile memory, for example, and stores the data extracted by the data extraction part 2. A storage control part 7 controls the data stored in the data storage part 9, based on the comparison made by the comparison means 6, whether or not the data is updated. A power supply part 11 supplies power to each part of the data reception system.

[0044]

In this embodiment, the tuner 1 and the data extraction part 2 are equivalent to the reception means, the next-update information extraction means 4 to the information extraction means, and the next-update information record means to the record means. Further, the comparison means 6 is equivalent to the comparison means, the data storage part 9 to the storage means, and the storage control part 7 to the writing control means.

[0045]

In this embodiment, the data decoding part 3, the next-update information extraction part 4, the next-update information record means 5, the comparison means 6, and the storage control part 7 all being enclosed in a broken line 40 are mainly realized by software. FIG. 2 is a block diagram showing the structure of the data decoding part 1, the next-update information extraction means 4, the next-update information record means 5, the comparison means 6, and the storage control part 7 in FIG. 1.

[0046]

In FIG. 2, ROM (Read Only Memory) 42 stores a data reception processing program. CPU (Central Operation Processing Device) 41 carries out the data reception processing program stored in the ROM 42 on RAM (Random Access Memory) 43. Accordingly, the data decoding part 3, the next-update information extraction means 4, the next-update information record means 5, the comparison means 6, and the storage control part 7 are functionally realized.

[0047]

FIG. 3 is a flowchart showing data reception processing by the data reception processing program in the data reception system in FIG. 1. Next, it is described how the data reception system in FIG. 1 operates by referring to the flowchart in FIG. 3.

[0048]

First of all, in the tuner 1, a broadcast signal in a channel set among broadcast signals received by an antenna is selected, and then a video signal included in the broadcast signal is extracted for output to the data extraction part 2. In the data extraction part 2, the video signal is subjected to data extraction. Further, in the data decoding part 3, the data extracted by the data extraction part 2 is decoded, and then the details of the decoded data is presented by the data presenting part 10.

[0049]

The storage control part 7 stores the data extracted by the data extraction part 2 in the data storage part 9 (step S1). The next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and then records the extracted next-update information in the next-update information record means 5 (step S2).

[0050]

Thereafter, the comparison means 6 reads the next-update information stored in the next-update information record means 5 (step S3), reads the current time/date information from the clock part 8 (step 4), and judges whether or not the next-update information coincides with the current time/date (step S5). When the next-update information does not coincide with the current time/date information, the comparison means 6 waits until the next-update information coincides with the current time/date.

[0051]

After the next-update information coincides with the current time/date, the storage control part 7 stores the data extracted by the data extraction part 2 in the data storage part 9 (step S6). Then, the next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and records the extracted next-update information in the next-update information record means 5 (step S7). Then, the procedure returns to step S3.

[0052]

As such, only when the next-update information recorded in the next-update information record means 5 coincides with the current time/date provided by the clock part 8, the data in the data storage part 9 is overwritten by the storage control part 7.

[0053]

As described above, according to the data reception system of this embodiment, the data recorded in the data storage part 9 is overwritten only when the received data is updated. Therefore, the frequency of data writing to the data storage part 9 is suppressed to minimum. In this manner, it is possible to keep data up-to-date while preventing the storage means 9 from being deteriorated.

[0054]

FIG. 4 is a block diagram showing the structure of a data reception system according to a second embodiment of the present invention.

[0055]

The data reception system in FIG. 4 is different from the data reception system in FIG. 1 in a respect that a tuner control part 12 is additionally provided, and a data reception processing program stored in the ROM 42 in FIG. 2 is not the same.

[0056]

The tuner control part 12 controls, based on the comparison made by the comparison means 6, channel selection made by the tuner

1. Other parts of the data reception system in FIG. 1 are similar to the structure of the data reception system in FIG. 1. In this embodiment, the tuner control part 12 is equivalent to the tuner control means.

[0057]

FIG. 5 is a flowchart showing data reception processing by a data reception processing program in the data reception system in FIG. 4. Next, it is described how the data reception system in FIG. 4 operates by referring to the flowchart in FIG. 5.

[0058]

First of all, the tuner 12 controls the tuner 1 so as to select an applicable channel (step S11). Accordingly, the tuner 1 selects a broadcast signal in the channel set among broadcast signals received by an antenna, and then outputs a video signal included in the broadcast signal to the data extraction part 2. The data extraction part 2 extracts data from the video signal. The data decoding part 3 decodes the data extracted by the data extraction part 2, and then presents the details of the decoded data to the data presenting part 10.

[0059]

The storage control part 7 stores the data extracted by the data extraction part 2 in the data storage part 9 (step S12). The next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and then records the extracted next-update information

in the next-update information record means 5 (step S13).

[0060]

Thereafter, the comparison means 6 reads the next-update information stored in the next-update information record means 5 (step S14), reads the current time/date information from the clock part 8 (step 15), and judges whether or not the next-update information coincides with the current time/date (step S16). When the next-update information does not coincide with the current time/date information, the comparison means 6 waits until the next-update information coincides with the current time/date.

[0061]

After the next-update information coincides with the current time/date, the tuner control part 12 controls the tuner 1 to select an applicable channel (step S17). Accordingly, the tuner 1 selects a broadcast signal in the channel set among broadcast signals received by the antenna, and then outputs a video signal included in the broadcast signal to the data extraction part 2. The data extraction part 2 extracts the data from the video signal.

[0062]

The storage control part 7 stores the data extracted by the data extraction part 2 in the data storage part 9 (step S18). Then, the next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and records the extracted next-update

information in the next-update information record means 5 (step S19). Then, the procedure returns to step S14.

[0063]

As such, only when the next-update information recorded in the next-update information record means 5 coincides with the current time/date provided by the clock part 8, the tuner 1 is switched to the applicable channel and the data in the data storage part 9 is overwritten by the storage control part 7.

[0064]

As described above, according to the data reception system of this embodiment, the tuner 1 is set to the applicable channel and the data recorded in the data storage part 9 is overwritten only when the received data is updated. Therefore, there is no more need to constantly set the tuner 1 to a channel for data broadcasting, and the frequency of data writing to the data storage part 9 is suppressed to minimum. In this manner, the tuner 1 can be used for some other purpose when the data is not updated, and it is possible to keep data up-to-date while preventing the storage means 9 from being deteriorated.

[0065]

FIG. 6 is a block diagram showing the structure of a data reception system according to a third embodiment of the present invention.

[0066]

The data reception system in FIG. 6 is different from the

data reception system in FIG. 4 in a respect that a power supply control part 13 is additionally provided, and a data reception processing program stored in the ROM 42 in FIG. 2 is not the same.

[0067]

The power supply control part 13 controls power supply from the power supply part 11 based on the comparison made by the comparison means 6. Other parts of the data reception system in FIG. 6 are similar to the structure of the data reception system in FIG. 4. In this embodiment, the power supply control part 13 is equivalent to the power supply control means.

[0068]

FIG. 7 is a flowchart showing data reception processing by a data reception processing program in the data reception system in FIG. 6. Next, it is described how the data reception system in FIG. 6 operates by referring to the flowchart in FIG. 7.

[0069]

First of all, the tuner control part 12 controls the tuner 1 so as to select an applicable channel (step S21). Accordingly, the tuner 1 selects a broadcast signal in the channel among broadcast signals received by an antenna, and then outputs a video signal included in the broadcast signal to the data extraction part 2. The data extraction part 2 extracts data from the video signal.

[0070]

The storage control part 7 stores the data extracted by the

data extraction part 2 in the data storage part 9 (step S22). The next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and then records the extracted next-update information in the next-update information record means 5 (step S23).

[0071]

The power supply control part 13 turns off a system power supply of the power supply part 11 (step S24). Herein, the system power supply supplies power to the tuner 1, the data extraction part 2, the data presenting part 10, and the tuner control part 12.

[0072]

Thereafter, the comparison means 6 reads the next-update information recorded in the next-update information record means 5 (step S25), reads the current time/date information from the clock part 8 (step 26), and judges whether or not the next-update information coincides with the current time/date (step S27). When the next-update information does not coincide with the current time/date information, the comparison means 6 waits until the next-update information coincides with the current time/date.

[0073]

After the next-update information coincides with the current time/date, the power supply control part 13 turns on the system power supply of the power supply part 11 (step S28). The tuner control part 12 controls the tuner 1 in such a manner as

to tune itself with an applicable channel (step S29). In this manner, the tuner selects a broadcast signal in the channel set among broadcast signals received by an antenna, and then outputs a video signal included in the broadcast signal to the data extraction part 2. The data extraction part 2 extracts data from the video signal.

[0074]

The storage control part 7 stores the data extracted by the data extraction part 2 in the data storage part 9 (step S30).

[0075]

The next-update information extraction means 4 extracts the next-update information from the data extracted by the data extraction part 2, and records the extracted next-update information in the next-update information record means 5 (step S31). The power supply control part 13 turns off the system power supply of the power supply part 13 (step S32). Then, the procedure returns to step S25.

[0076]

As such, only when the next-update information recorded in the next-update information record means 5 coincides with the current time/date provided by the clock part 8, the system power supply required for any part for data reception is turned on, and the tuner 1 is switched to the applicable channel so that the data in the data storage part 9 is overwritten by the storage control part 7.

[0077]

As described above, according to the data reception system of this embodiment, the system power supply required for the data reception is turned on and the tuner 1 is set to the applicable channel so that the data is written into the data storage part 9 only when the received data is updated. Therefore, there is no more need to constantly supply power to any part required to receive data and to set the tuner 1 to a channel for data broadcasting, and thus the frequency of data writing to the data storage part 9 is suppressed to minimum. In this manner, the tuner 1 can be used for some other purpose when the data is not updated, and it is possible to keep data up-to-date while preventing the storage means 9 from being deteriorated.

[0078]

Note that, in the above-described embodiments, the ROM 42 is used as a recording medium to record the data reception processing program. However, other semiconductor memory may be used as an alternative to the ROM 42, or other recording medium such as floppy disk, hard disk, and CD-ROM will do.

[0079]

In the above-described embodiments, the data decoding part 3, the next-update information extraction part 4, the next-update information record means 5, the comparison means 6, and the storage control part 7 are structured to be implemented via software, the data decode part 3, the next-update information

extraction part 4, the next-update information record means 5, the comparison means 6, and the storage control part 7 may be partially or wholly structured to be implemented via hardware.

[0080]

In the above-described embodiments, although the description is made for a case where the present invention is applied to the data receiver and the data reception method of a type receiving the broadcast-type service, the present invention can be applied to the data receiver, e.g., personal computer, and the data reception method of a type receiving the communication-type service such as the Internet.

[0081]

[Effects of the Invention]

As is obvious from the above, according to the present invention, data is written into the storage means based on the comparison made between the next-update information and the current time/date. Therefore, the frequency of writing data to the storage means can be suppressed to minimum. In this manner, it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0082]

Further, when the channel selection in the tuner is controlled based on the comparison made between the next-update information recorded in the record means and the current time/date. Therefore, there is no more need to constantly set the tuner to

an applicable channel, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[0083]

Still further, the reception means is controlled with power supply based on the comparison made between the next-update information recorded in the record means and the current time/date. Therefore, there is no more need to constantly supply power to the reception means, and it becomes possible to keep data up-to-date while preventing the storage means from being deteriorated.

[Brief Description of the Drawings]

[FIG. 1]

A block diagram showing the structure of a data reception system according to a first embodiment of the present invention.

[FIG. 2]

A block diagram showing the structure of a data decoding part, a next-update information extraction part, next-update information record means, comparison means, and a storage control part.

[FIG. 3]

A flowchart showing data reception processing by a data reception processing program in the data reception system in FIG. 1.

[FIG. 4]

A block diagram showing the structure of a data reception system according to a second embodiment of the present invention.

[FIG. 5]

A flowchart showing data reception processing by a data reception processing program in the data reception system in FIG. 4.

[FIG. 6]

A block diagram showing the structure of a data reception system according to a third embodiment of the present invention.

[FIG. 7]

A flowchart showing data reception processing by a data reception processing program in the data reception system in FIG. 6.

[FIG. 8]

A block diagram showing the structure of a conventional data reception system.

[Description of the Reference Characters]

1 tuner

2 data extraction part

3 data decoding part

4 next-update information extraction part

5 next-information record means

6 comparison means

7 storage control part

8 clock part

9 data storage part

10 data presenting part

11 power supply part

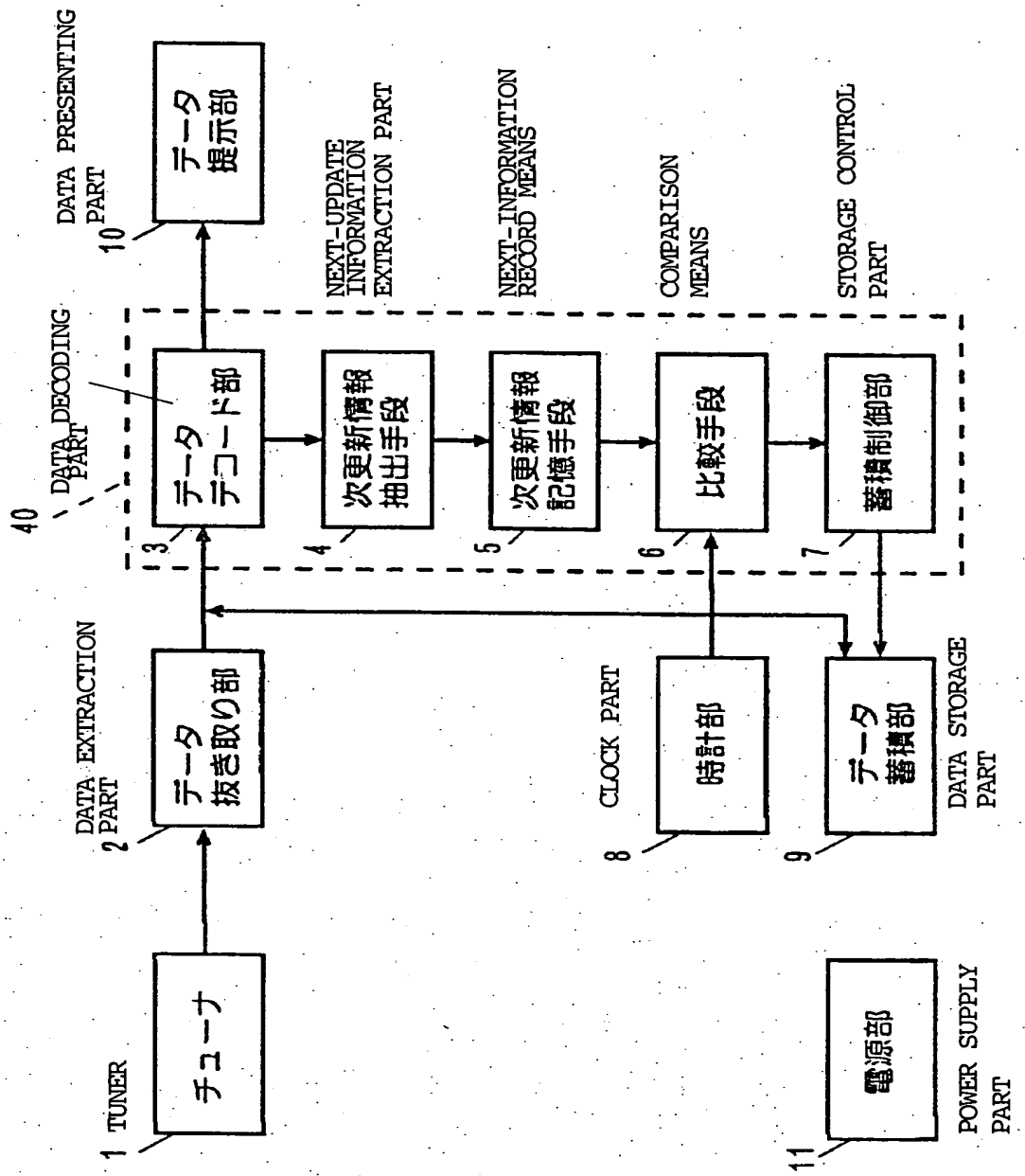
12 tuner control part

13 power supply part

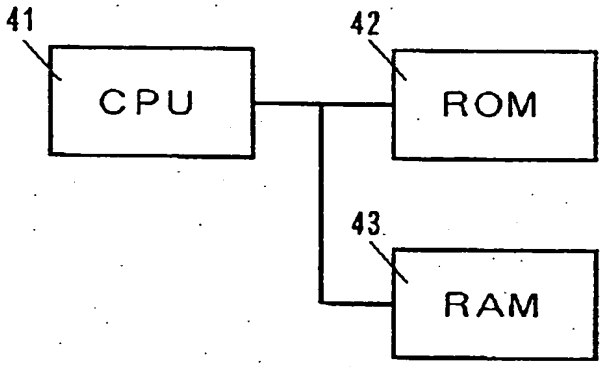
【書類名】　図面　[Document Name] DRAWINGS

[Fig.1]

【図１】

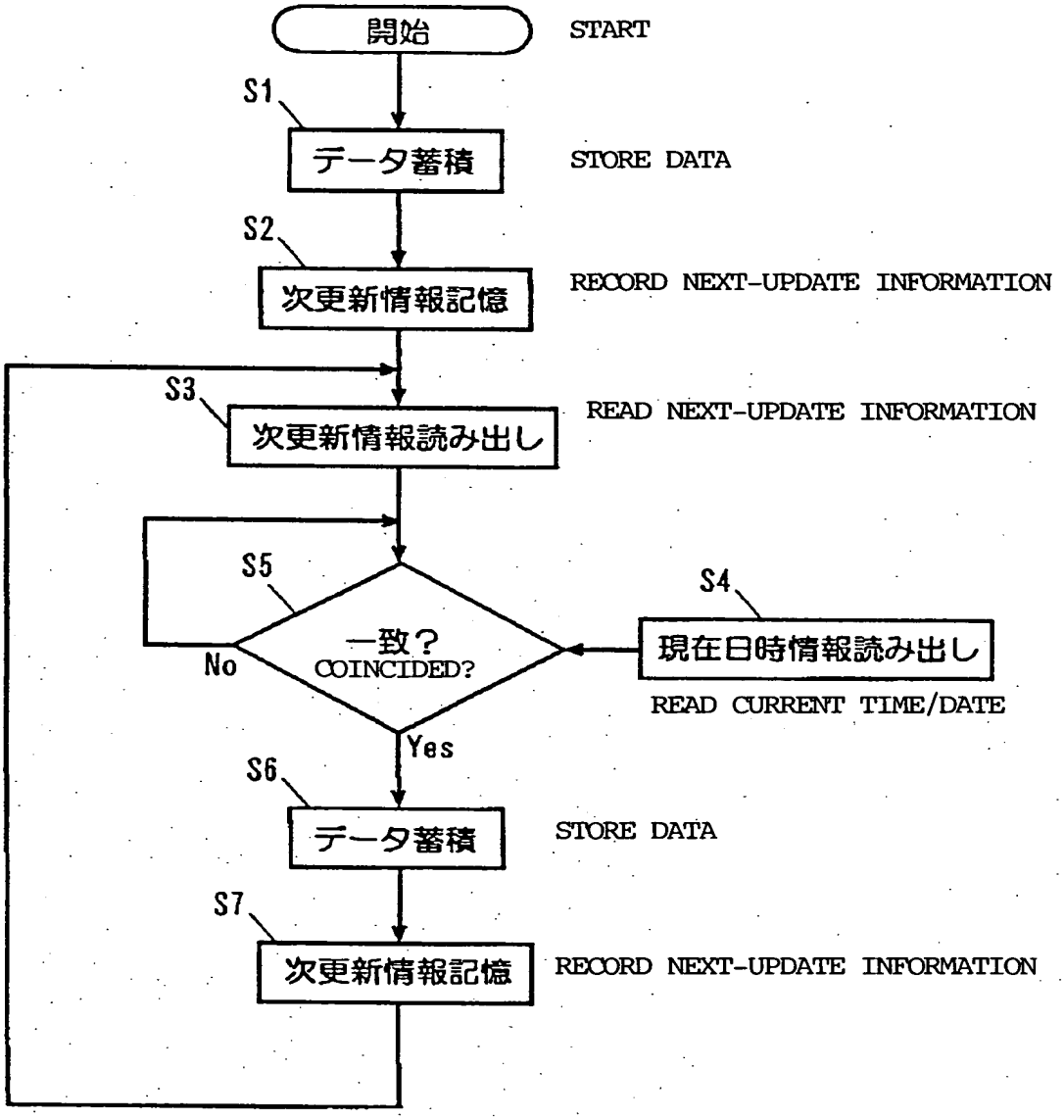


【図２】
[Fig.2]



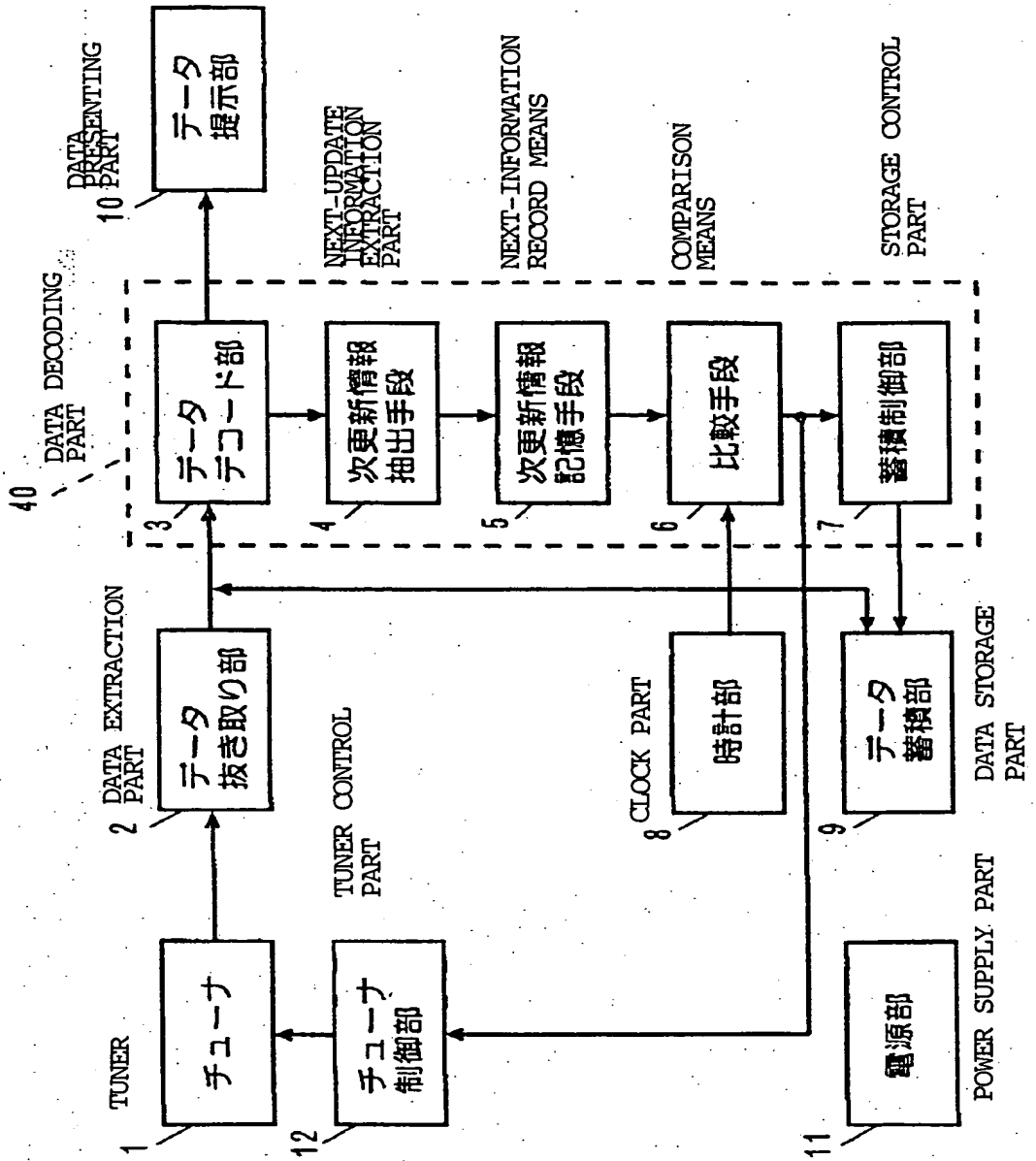
【図３】

[Fig.3]

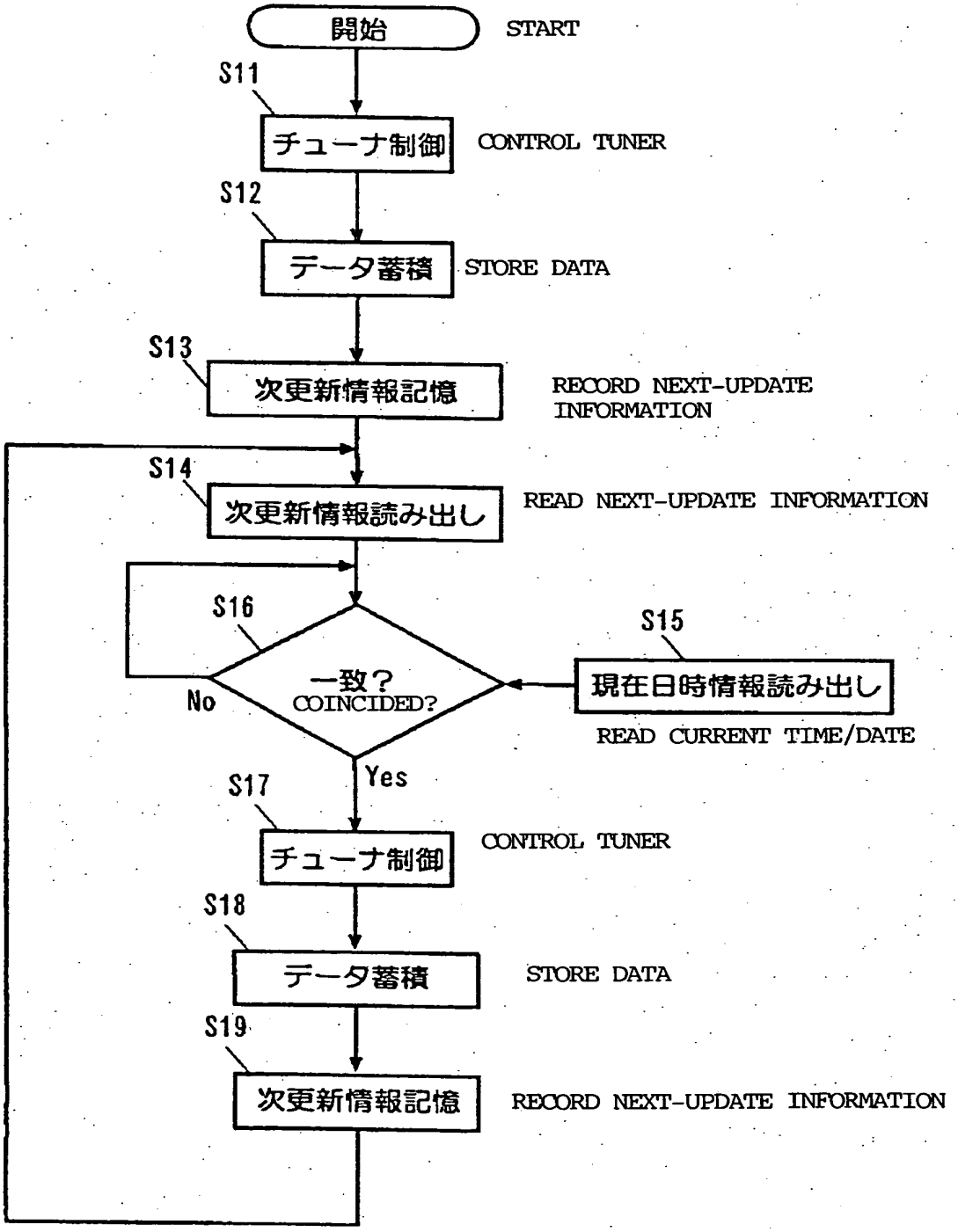

開始
START
S1
データ蓄積
STORE DATA
S2
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION
S3
次更新情報読み出し
READ NEXT-UPDATE INFORMATION
S5
一致？
COINCIDED?
No
S4
現在日時情報読み出し
READ CURRENT TIME/DATE
Yes
S6
データ蓄積
STORE DATA
S7
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION

【図４】

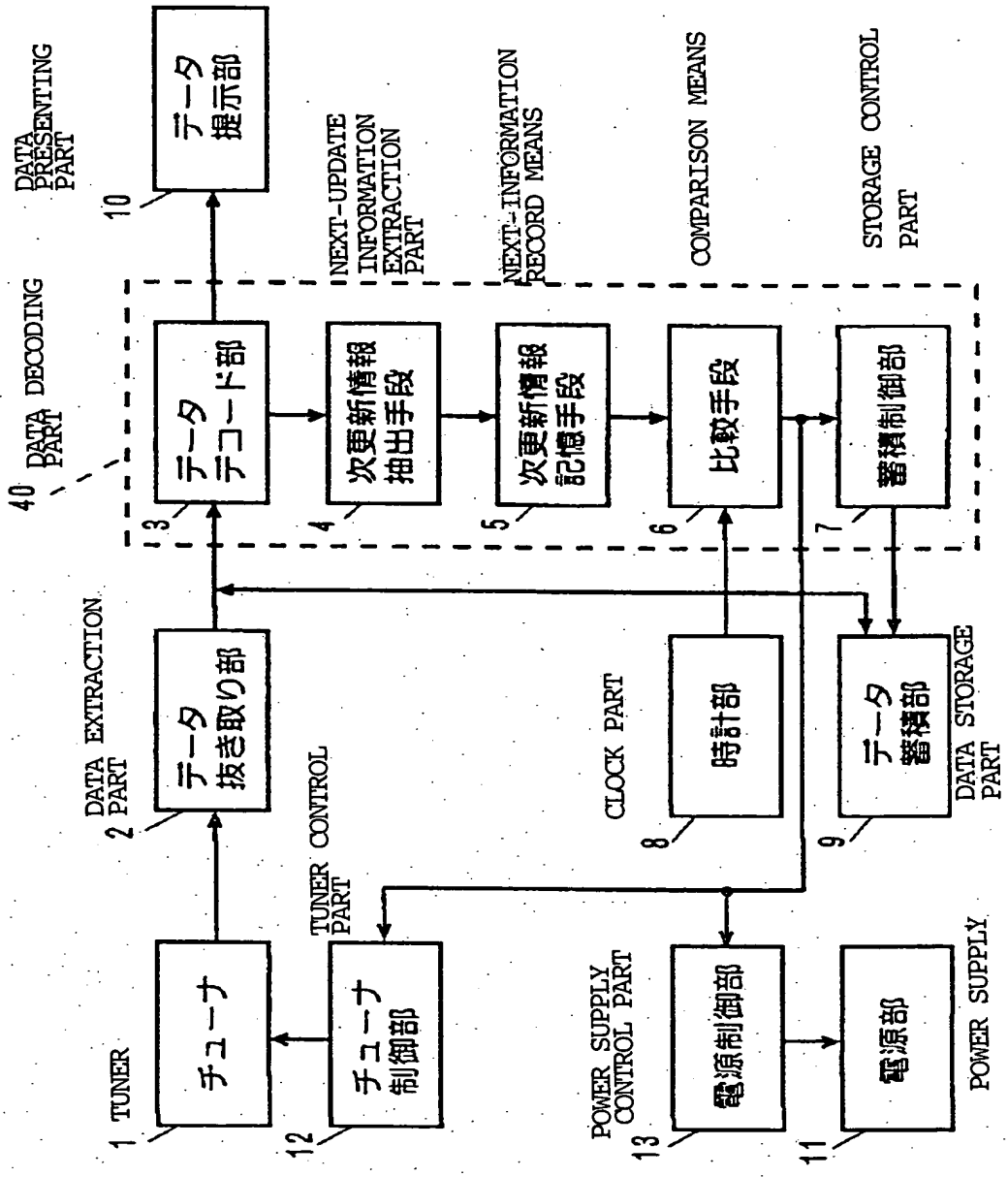
[Fig.4]


データ提示部
DATA PRESENTING PART
10
NEXT-UPDATE INFORMATION EXTRACTION PART
NEXT-INFORMATION RECORD MEANS
COMPARISON MEANS
STORAGE CONTROL PART
DATA DECODING PART
40
データデコード部
次更新情報抽出手段
次更新情報記憶手段
比較手段
蓄積制御部
3
4
5
6
7
データ抜き取り部
DATA EXTRACTION PART
2
TUNER CONTROL PART
CLOCK PART
時計部
8
データ蓄積部
9
DATA STORAGE PART
チューナ
TUNER
1
チューナ制御部
12
電源部
11
POWER SUPPLY PART

【図５】
[Fig.5]

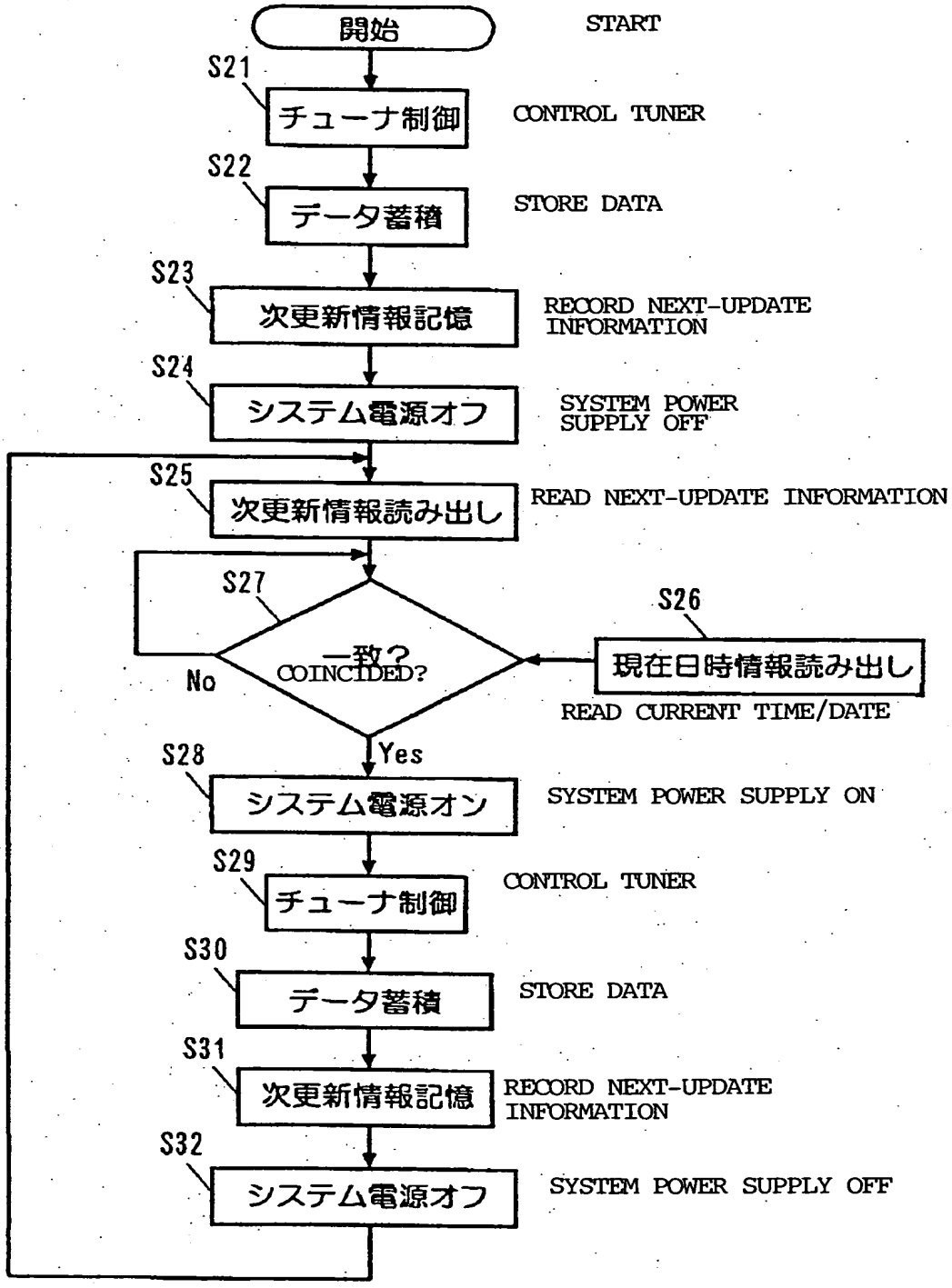

開始
START
S11
チューナ制御
CONTROL TUNER
S12
データ蓄積
STORE DATA
S13
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION
S14
次更新情報読み出し
READ NEXT-UPDATE INFORMATION
S16
一致？
COINCIDED?
No
S15
現在日時情報読み出し
READ CURRENT TIME/DATE
Yes
S17
チューナ制御
CONTROL TUNER
S18
データ蓄積
STORE DATA
S19
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION

【図６】
[Fig.6]


データ提示部
DATA PRESENTING PART
10
データデコード部
DATA DECODING PART
40
3
次更新情報抽出手段
NEXT-UPDATE INFORMATION EXTRACTION PART
4
次更新情報記憶手段
NEXT-INFORMATION RECORD MEANS
5
比較手段
COMPARISON MEANS
6
蓄積制御部
STORAGE CONTROL PART
7
データ抜き取り部
DATA EXTRACTION PART
2
時計部
CLOCK PART
8
データ蓄積部
DATA STORAGE PART
9
チューナ
TUNER
1
チューナ制御部
TUNER CONTROL PART
12
電源制御部
POWER SUPPLY CONTROL PART
13
電源部
POWER SUPPLY
11

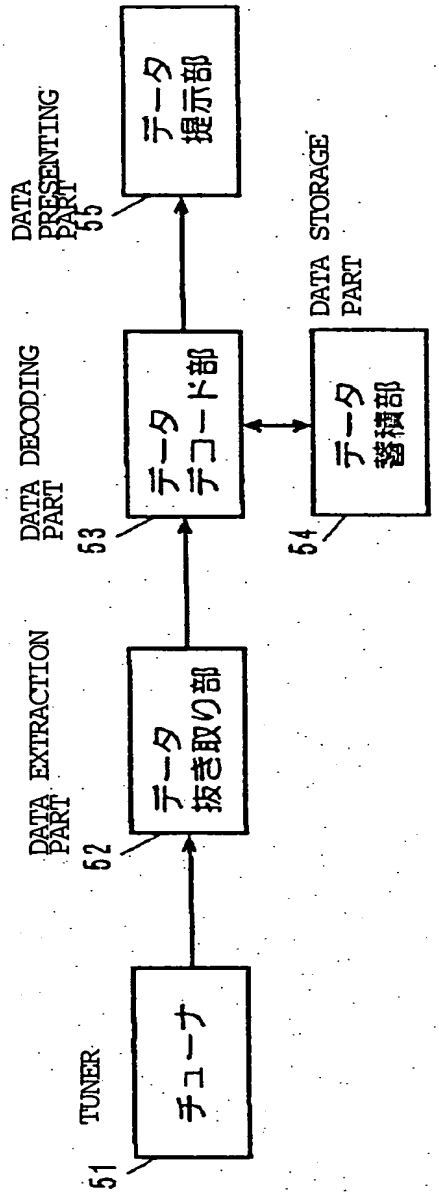
【図７】

[Fig.7]


開始
START
S21
チューナ制御
CONTROL TUNER
S22
データ蓄積
STORE DATA
S23
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION
S24
システム電源オフ
SYSTEM POWER SUPPLY OFF
S25
次更新情報読み出し
READ NEXT-UPDATE INFORMATION
S27
一致？
COINCIDED?
No
S26
現在日時情報読み出し
READ CURRENT TIME/DATE
Yes
S28
システム電源オン
SYSTEM POWER SUPPLY ON
S29
チューナ制御
CONTROL TUNER
S30
データ蓄積
STORE DATA
S31
次更新情報記憶
RECORD NEXT-UPDATE INFORMATION
S32
システム電源オフ
SYSTEM POWER SUPPLY OFF

【図８】

[Fig.8]


チューナ
TUNER
51
データ
抜き取り部
DATA EXTRACTION
PART
52
データ
デコード部
DATA DECODING
PART
53
データ
蓄積部
DATA STORAGE
PART
54
データ
提示部
DATA
PRESENTING
PART
55

[Document Name] ABSTRACT

[Summary]

[Object] To provide a data reception system and a data reception method capable of cutting down, to a minimum, the frequency of data writing necessary to keep the storage data the latest, and a recording medium on which a data reception processing program is recorded.

[Solution] A tuner 1 selects a broadcast signal in a set channel, and outputs a video signal included in the video signal. A data extraction part 2 extracts data from the video signal. A next-update information extraction means 4 extracts next-update information from the data extracted by the data extraction part 2. Next-update information record means 5 records the next-update information. A clock part 8 outputs current time/date information. Comparison means 6 compares the current time/date information outputted by the clock part 8 with the next-update information recorded in the next-update information record means. A storage control part 7 writes, into a data storage part 9, the data extracted by the data extraction part 2 based on the comparison by the comparison means 6.

[Selected Figure] FIG. 1